Nakamichi

Service Manual

Nakamichi PA-304

Mobile Power Amplifier

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1. GENERAL

1.1. Notes on Order of Spare Parts

Note that the Main P.C.B. Ass'y and Power Supply P.C.B. Ass'y do not include the following parts. Please order the excluded parts together with P.C.B. Ass'y to complete a set of P.C.B. Ass'y.

P.C.B. Ass'y	Excluded Parts	
	Part Name	Remarks
Main P.C.B. Ass'y (BA07652A)	• TR Block Ass'y A . . . . . 2 pcs. (BA07656A)	Ref. No. 15 in Fig. 4.1. Consists of transistors and heat sink.
Power Supply P.C.B. Ass'y (BA07653A)	• TR Block Ass'y B . . . . . 1 pce. (BA07657A)	Ref. No. 10 in Fig. 4.1. Consists of transistors and heat sink.
	• TR Block Ass'y C . . . . . 1 pce. (BA07658A)	Ref. No. 12 in Fig. 4.1. Consists of diodes and heat sink.
	• Converter Transformer . . 1 pce. (0B50158A)	Ref. No. 23 in Fig. 4.1. (T401)
	• Choke Coil . . . . . 1 pce. (0B51314A)	Ref. No. 24 in Fig. 4.1. (L401)

1.2. Destination

- U.S.A. and Canada
- Other
- Europe
- Japan

1.3. Package Ass'y

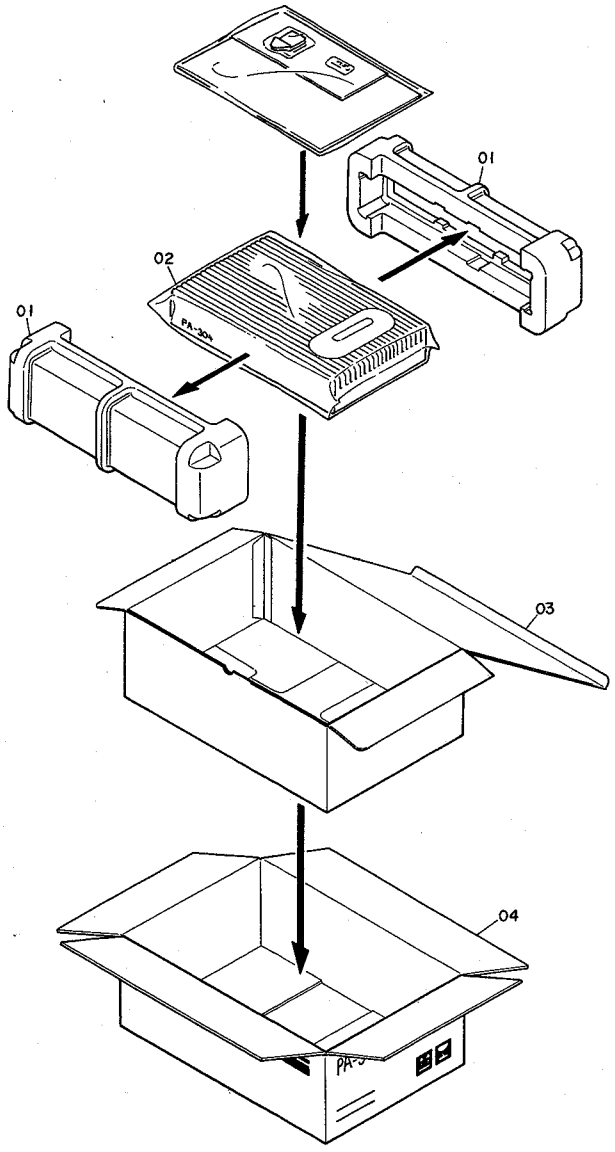


Fig. 1.1

1.4. Accessory Ass'y

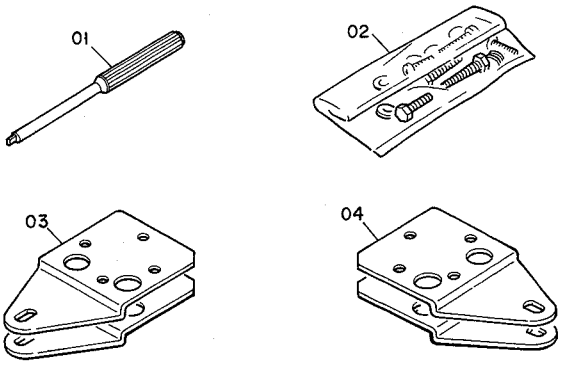


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty
		Package Ass'y	
01	0F04250B	Packing (U.S.A./Other/Europe)	2
	0F04260B	Packing (Japan)	2
02	0F04249B	Poly-Bag (300x400x0.08)	1
03	0F04268A	Outer Carton (U.S.A.)	1
	0F04329A	Outer Carton (Other/Europe)	1
	0F04269A	Outer Carton (Japan)	1
04	0F04251B	Inner Carton (U.S.A.)	1
	0F04328A	Inner Carton (Other/Europe)	1
	0F04261A	Inner Carton (Japan)	1
	—	**Accessory Ass'y**	1
01	0D03903C	Screwdriver	1
02	DA04253A	Screw Ass'y	1
03	0H05572A	Mounting Plate A	1
04	0H05589A	Mounting Plate B	1
—	0D03092B	Poly-Bag (320x340x0.08)	1
—	0D04593A	Poly-Bag (80x100x0.05)	1
—	0D04969A	Owner's Manual (English/ German/French)	1
—	0D04970A	Owner's Manual (Japanese)	1
—	0D04810A	Important Notice	1

2. REMOVAL PROCEDURE

2.1. Fuse

Pull out F01 (Fuse 30 A) toward you. (F01 (Fuse 30 A) is hard to remove.)

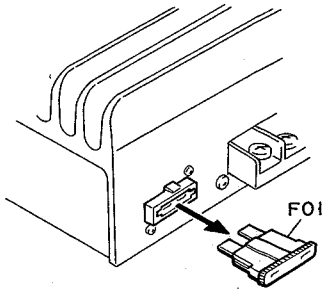


Fig. 2 Rear View

3. ADJUSTMENTS

3.1. Parts Location for Adjustment

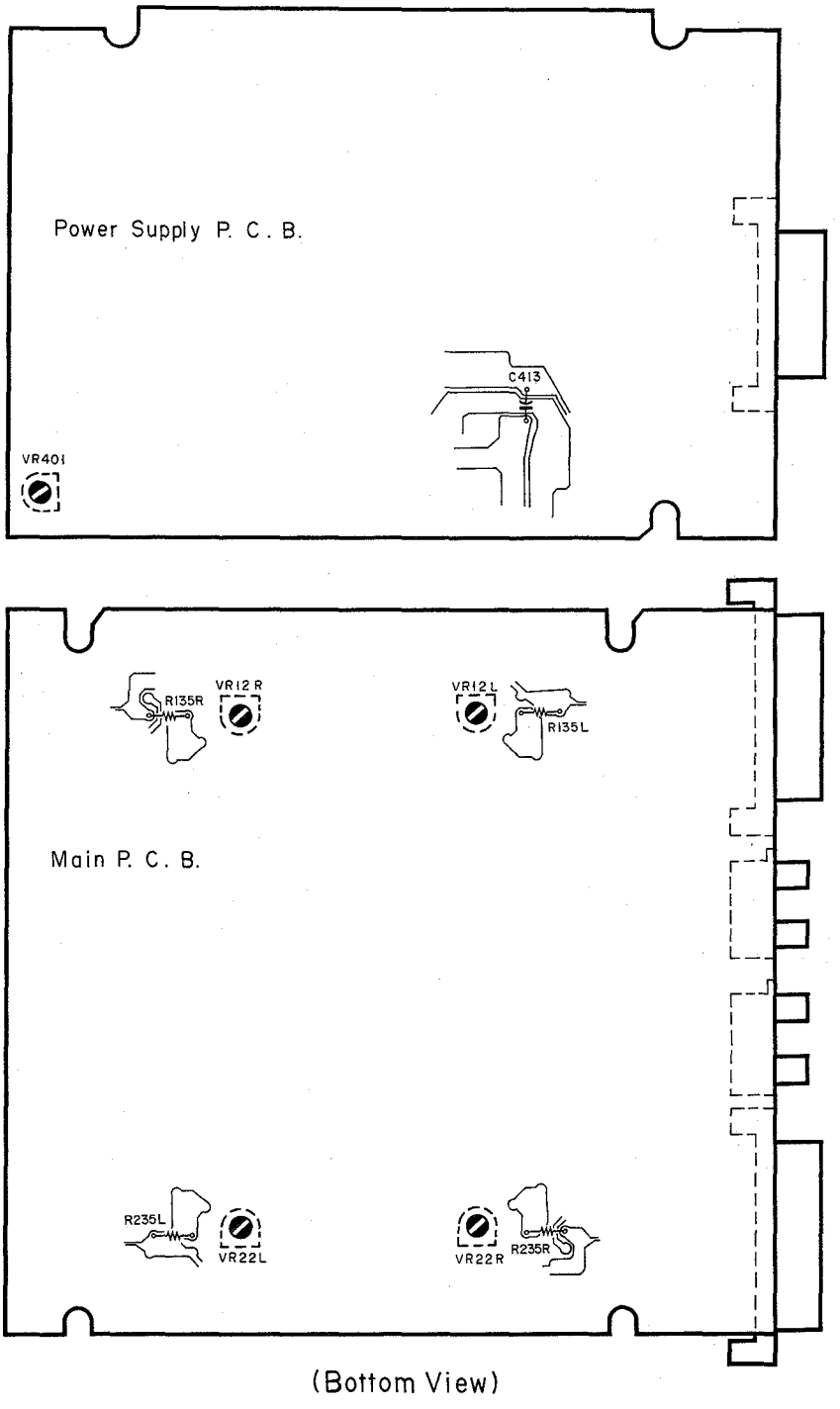


Fig. 3

3.2. Adjustment Procedures

Note: Perform adjustment from the bottom of the PA-304.

3.2.1. Power Supply Output Voltage (Power Supply P.C.B. Ass'y)

(1) Connect a DC voltmeter across C413.
(2) Supply 14.4 VDC to +14.4 V Terminal and Remote Terminal of the PA-304.
(3) Adjust VR401 to obtain +24.0 V on the DC voltmeter.

3.2.2. Idling Current (Main P.C.B. Ass'y)

(1) Insert shorting pins into Input Pin Jacks.
(2) Connect a DC millivoltmeter across R135L (R135R).
(3) Adjust VR12L (VR12R) to obtain 6 mV (approx. 27 mA) on the DC millivoltmeter.
(4) Connect a DC millivoltmeter across R235L (R235R).
(5) Adjust VR22L (VR22R) to obtain 6 mV (approx. 27 mA) on the DC millivoltmeter.
(6) Remove the shoring pins.

4. MECHANISM ASS'Y AND PARTS LIST

4.1. Synthesis

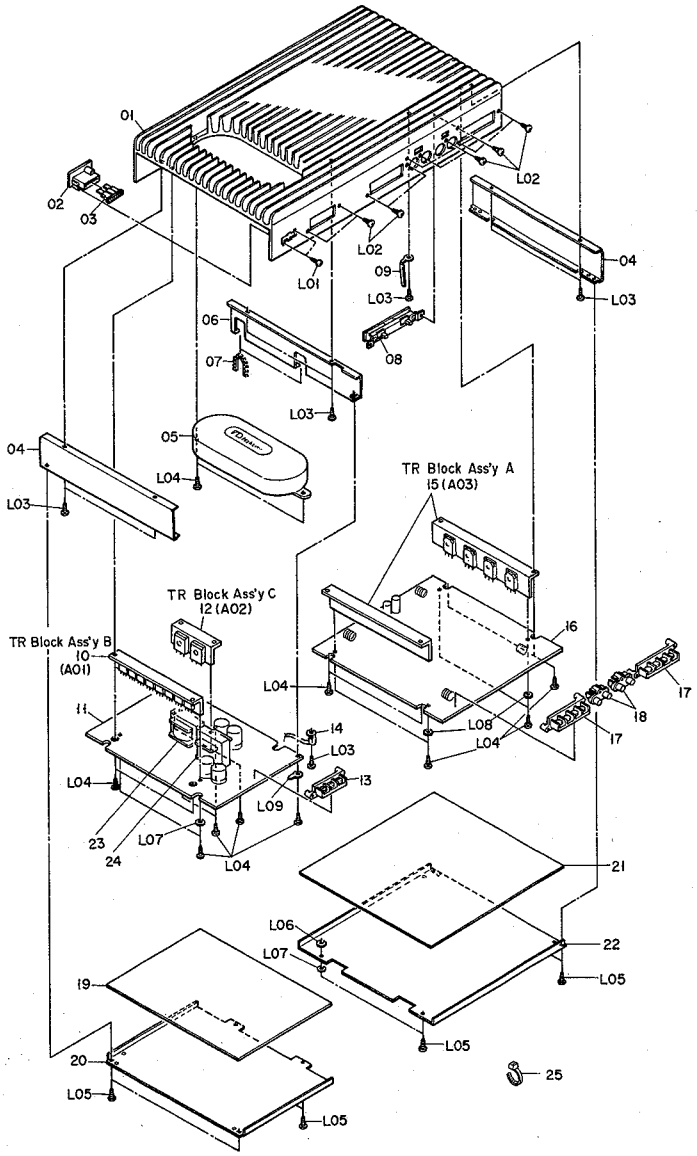


Fig. 4.1

Schematic Ref. No.	Part No.	Description	Q'ty
4.1. Synthesis			
		Synthesis	
01	0H05571A	Heat Sink B317	1
02	BA07655A	Fuse P.C.B. Ass'y	1
03	0B90403A	Fuse 30A	1
04	0H05573A	Side Chassis A	2
05	HA05715A	Transformer Cover Ass'y	1
06	0J05919B	Center Chassis	1
07	0J05966A	Free Bushing	2
08	BA07654A	BTL Switch P.C.B. Ass'y	1
09	0E03145A	Clip CS-9	1
10	BA07657A	TR Block Ass'y B	1
11	BA07653A*	Power Supply P.C.B. Ass'y	1
12	BA07658A	TR Block Ass'y C	1
13	0B84106A	Terminal 3P (U.S.A.) (TM401)	1
	0B84152A	Terminal 3P (Gold) (Other/Europe/ Japan) (TM401)	1
14	0B19013A	Thermistor PTH487A01BE471 (TH401)	1
15	BA07656A	TR Block Ass'y A	2
16	BA07652A*	Main P.C.B. Ass'y	1
17	0B84107A	Terminal 4P (U.S.A.) (TM101, TM201)	2
	0B84153A	Terminal 4P (Gold) (Other/Europe/ Japan) (TM101, TM201)	2
18	0B81630A	Pin Jack 2P (Gold) (PJ101, PJ201)	2
19	0J05923A	Bottom Sheet A	1
20	0H05575A	Bottom Cover A	1
21	0J05924A	Bottom Sheet B	1
22	0H05576A	Bottom Cover B	1
23	0B50158A	Converter Transformer (T401 on Power Supply P.C.B. Ass'y)	1
24	0B51314A	Choke Coil (L401 on Power Supply P.C.B. Ass'y)	1
25	0B08515A	Insu-Lock	7
L01	0E00974A	BT2x8 ⊕ Binding (Black Chromate)	2
L02	0E00921A	BT3x8 ⊕ Binding (Black Chromate)	10
L03	0E03013A	BT3x5 ⊕ Binding	8
L04	0E00868A	BT3x8 ⊕ Binding	19
L05	0E00860A	BT3x6 ⊕ Binding (Black chromate)	8
L06	0J05057A	Washer 3.4x7x0.5	1
L07	0J06007A	Fiber Washer 8x3.1x0.5T	3
L08	0E00172A	Washer 3mm Toothed Lock	2
L09	0E00174A	Earth Lug B-4	1

*: See item 1.1.

4.2. TR Block Ass'y B (A01)

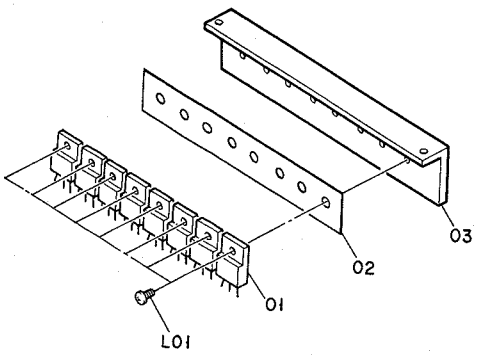


Fig. 4.2

4.3. TR Block Ass'y C (A02)

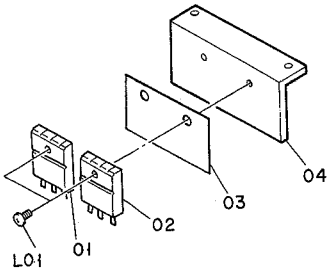


Fig. 4.3

4.4. TR Block Ass'y A (A03)

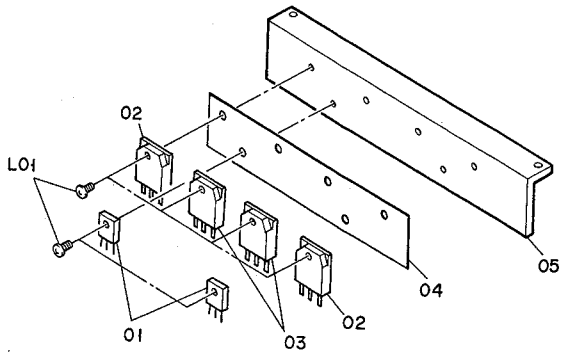


Fig. 4.4

Schematic Ref. No.	Part No.	Description	Q'ty
4.2. TR Block Ass'y B (A01)			
A01	**BA07657A**	**TR Block Ass'y B**	**1**
01	0B10315A	TR 2SD1445A (Q401-Q408)	8
02	0J05946A	Transistor Sheet B	1
03	0J05921A	Heat Sink B	1
L01	0E03319A	M3x8 ⊕ Binding	8
4.3. TR Block Ass'y C (A02)			
A02	**BA07658A**	**TR Block Ass'y C**	**1**
01	0B12612A	FMU-32R (D405)	1
02	0B12611A	FMU-32S (D404)	1
03	0J05947A	Transistor Sheet C	1
04	0J05922A	Heat Sink C	1
L01	0E03319A	M3x8 ⊕ Binding	2
4.4. TR Block Ass'y A (A03)			
A03	**BA07656A**	**TR Block Ass'y A**	**1**
01	0B10199A	TR 2SC3421 (Q104L,R or Q204L,R)	2
02	0B10312A	TR 2SC4467 (Q110L,R or Q210L,R)	2
03	0B10313A	TR 2SA1694 (Q111L,R or Q211L,R)	2
04	0J05945A	Transistor Sheet A	1
05	0J05920A	Heat Sink A	1
L01	0E03319A	M3x8 ⊕ Binding	6

5. MOUNTING DIAGRAMS

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
4. Abbreviation for part name:
   TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode
   RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor , RC — Cement Resistor
   CE — Electrolytic Capacitor, CML — Mylar Capacitor, CC — Ceramic Capacitor, CPP — PP Capacitor,
   CMM — Metalized Mylar Capacitor, CSP — Polystyrene Capacitor, C — Mica Capacitor

5.1. Power Supply P.C.B. Ass'y

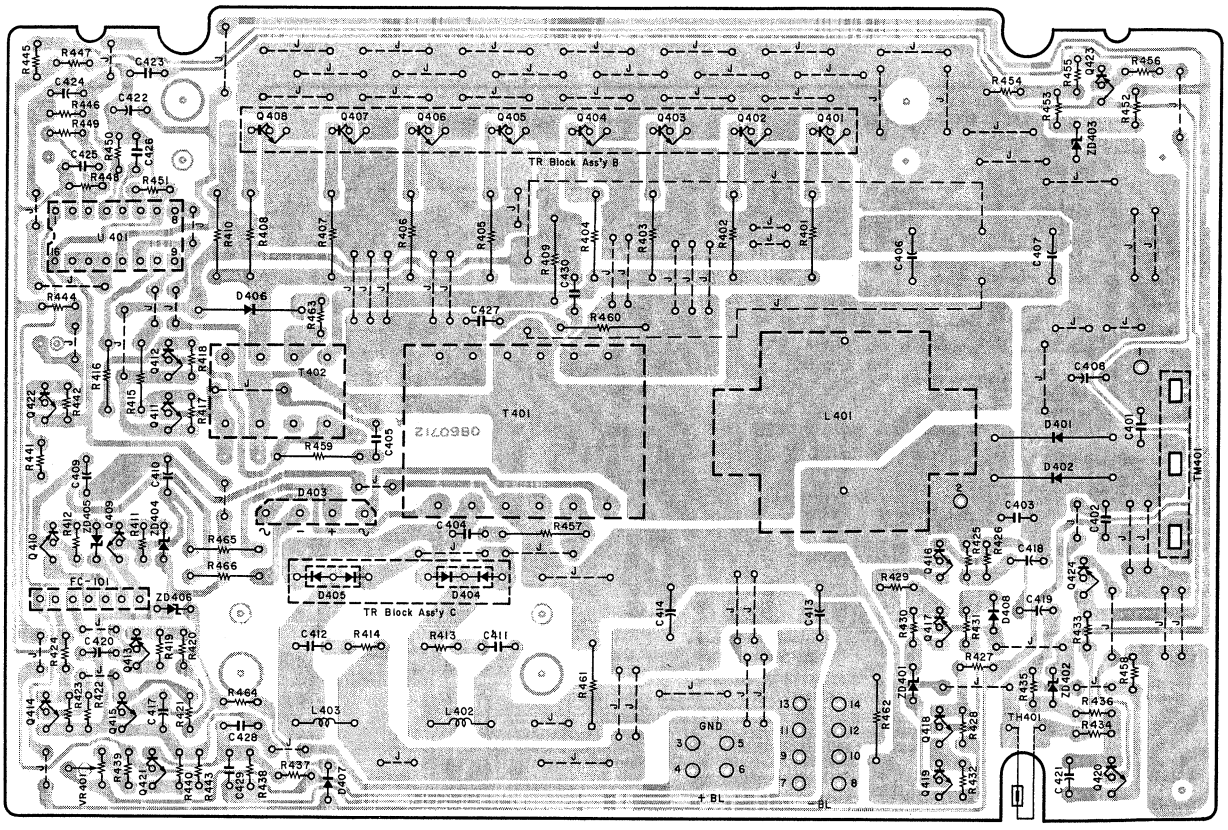


Fig. 5.1

Schematic Ref. No.	Part No.	Description
5.1. Power Supply P.C.B. Ass'y		
	BA07653A (Note)	**Power Supply P.C.B. Ass'y**
	0B60712A	Power Supply P.C.B.
U401	0B06427A	IC μPC494C
Q409	0B06452A	TR 2SD1406
Q410	0B06451A	TR 2SB1015
Q411,412	0B10046A	TR 2SD1347
Q413	0B06013A	TR 2SA733 (P,Q)
Q414,415	0B06100A	TR 2SC945 (K,P,Q)
Q416	0B06100A	TR 2SC945 (K,P,Q)
Q417	0B06013A	TR 2SA733 (P,Q)
Q418,419	0B06100A	TR 2SC945 (K,P,Q)
Q420,421	0B06100A	TR 2SC945 (K,P,Q)
Q422	0B06100A	TR 2SC945 (K,P,Q)
Q423	0B06013A	TR 2SA733 (P,Q)
Q424	0B10058A	TR DTA114ES
ZD401	0B12144A	ZD 4.7V RD4.7JSB2
ZD402	0B12186A	ZD 18V RD18JSB2
ZD403	0B12623A	ZD 11V RD11ESB2
ZD404,405	0B12204A	ZD 33V RD33JSB2
ZD406	0B12623A	ZD 11V RD11ESB2
D401,402	0B06458A	SiD 30D-2
D403	0B12418A	SiD UB-151
D406	0B12665A	SiD RU4YX
D407,408	0B06398A	SiD 1SS176
T402	0B50159A	Drive Transformer (EI19)
L402,403	0B51313A	Choke Coil
VR401	0B32080A	Semi VR 10K (B)
R401,402	0B24170A	RF 0.47 1W J
R403,404	0B24170A	RF 0.47 1W J
R405,406	0B24170A	RF 0.47 1W J
R407,408	0B24170A	RF 0.47 1W J
R409,410	0B24230A	RF 6.8 1W J
R411,412	0B09673A	RK 680 1/6W J
R413,414	0B09665A	RK 330 1/6W J
R415,416	0B01680A	RK 820 1/4W J
R417,418	0B09665A	RK 330 1/6W J
R419	0B09677A	RK 1.0K 1/6W J
R420	0B09699A	RK 8.2K 1/6W J
R421,422	0B09709A	RK 22K 1/6W J
R423	0B09697A	RK 6.8K 1/6W J
R424	0B09701A	RK 10K 1/6W J
R425,426	0B09669A	RK 470 1/6W J
R427	0B09701A	RK 10K 1/6W J
R428	0B09697A	RK 6.8K 1/6W J
R429,430	0B09677A	RK 1.0K 1/6W J
R431	0B09721A	RK 68K 1/6W J
R432	0B09685A	RK 2.2K 1/6W J
R433	0B09689A	RK 3.3K 1/6W J
R434	0B09701A	RK 10K 1/6W J
R435,436	0B09693A	RK 4.7K 1/6W J
R437,438	0B09725A	RK 100K 1/6W J
R439	0B09709A	RK 22K 1/6W J
R440	0B09677A	RK 1.0K 1/6W J
R441,442	0B09709A	RK 22K 1/6W J
R443	0B09689A	RK 3.3K 1/6W J
R444	0B09709A	RK 22K 1/6W J
R445	0B09701A	RK 10K 1/6W J
R446	0B09694A	RK 5.1K 1/6W J
R447	0B09701A	RK 10K 1/6W J
R448	0B09733A	RK 220K 1/6W J
R449	0B09677A	RK 1.0K 1/6W J
R450	0B09685A	RK 2.2K 1/6W J
R451	0B09701A	RK 10K 1/6W J
R452	0B09669A	RK 470 1/6W J
R453	0B09701A	RK 10K 1/6W J
R454	0B09700A	RK 9.1K 1/6W J
R455	0B09741A	RK 470K 1/6W J
R456	0B09693A	RK 4.7K 1/6W J
R457	0B24231A	RF 100 1W J
R458	0B09629A	RK 10 1/6W J
R459	0B24231A	RF 100 1W J
R460	0B24122A	RF 10 2W J
R461,462	0B24232A	RF 820 1W J
R463	0B09625A	RK 6.8 1/6W J
R464	0B09677A	RK 1.0K 1/6W J
R465,466	0B09753A	RK 4.7 1/4W J
C401	0B41822A	CML 0.47μ 50V J
C402,403	0B41917A	CC 0.10μ 50V Z
C404	0B41084A	CML 1500P 50V J
C405	0B09854A	CML 6800P 50V J
C406,407	0B40615A	CE 3300μ 16V
C408	0B40079A	CE 220μ 16V
C409	0B40617A	CE 180μ 50V
C410	0B40636A	CE 330μ 63V
C411,412	0B41082A	CML 1000P 50V J
C413,414	0B40616A	CE 1800μ 35V
C417	0B40206A	CE 100μ 16V
C418,419	0B40077A	CE 47μ 16V
C420	0B40206A	CE 100μ 16V
C421	0B40113A	CE 2.2μ 50V
C422	0B40077A	CE 47μ 16V
C423	0B41917A	CC 0.10μ 50V Z
C424	0B40052A	CE 470μ 6.3V
C425	0B41298A	CML 0.10μ 50V J
C426	0B41082A	CML 1000P 50V J
C427	0B09860A	CML 0.022μ 50V J
C428	0B41088A	CML 3300P 50V J
C429	0B41082A	CML 1000P 50V J
C430	0B41298A	CML 0.1μ 50V J
FC101	0B83748A	Ribbon Cable 7P 210mm
FC102	0B83749A	Ribbon Cable 2P 250mm
FC103	0B83750A	Ribbon Cable 2P 310mm
FC104	0B83752A	Ribbon Cable 2P 400mm
FC105	0B83753A	Ribbon Cable 2P 460mm
FC106	0B83751A	Ribbon Cable 2P 370mm
FC107	0B83753A	Ribbon Cable 2P 460mm
	0B80237A	Wire RED 130mm(1)
	0B80238A	Wire BLK 130mm(1)
	0E00868A	BT3x8 ⊕ Binding (4)
	0J06007A	Washer 8x3.1x0.5T (Fiber) (1)

Note: TR Block Ass'y B, TR Block Ass'y C, T401, and L401 are not included in the Power Supply P.C.B. Ass'y. (See item 1.1.)

5.2. Main P.C.B. Ass'y

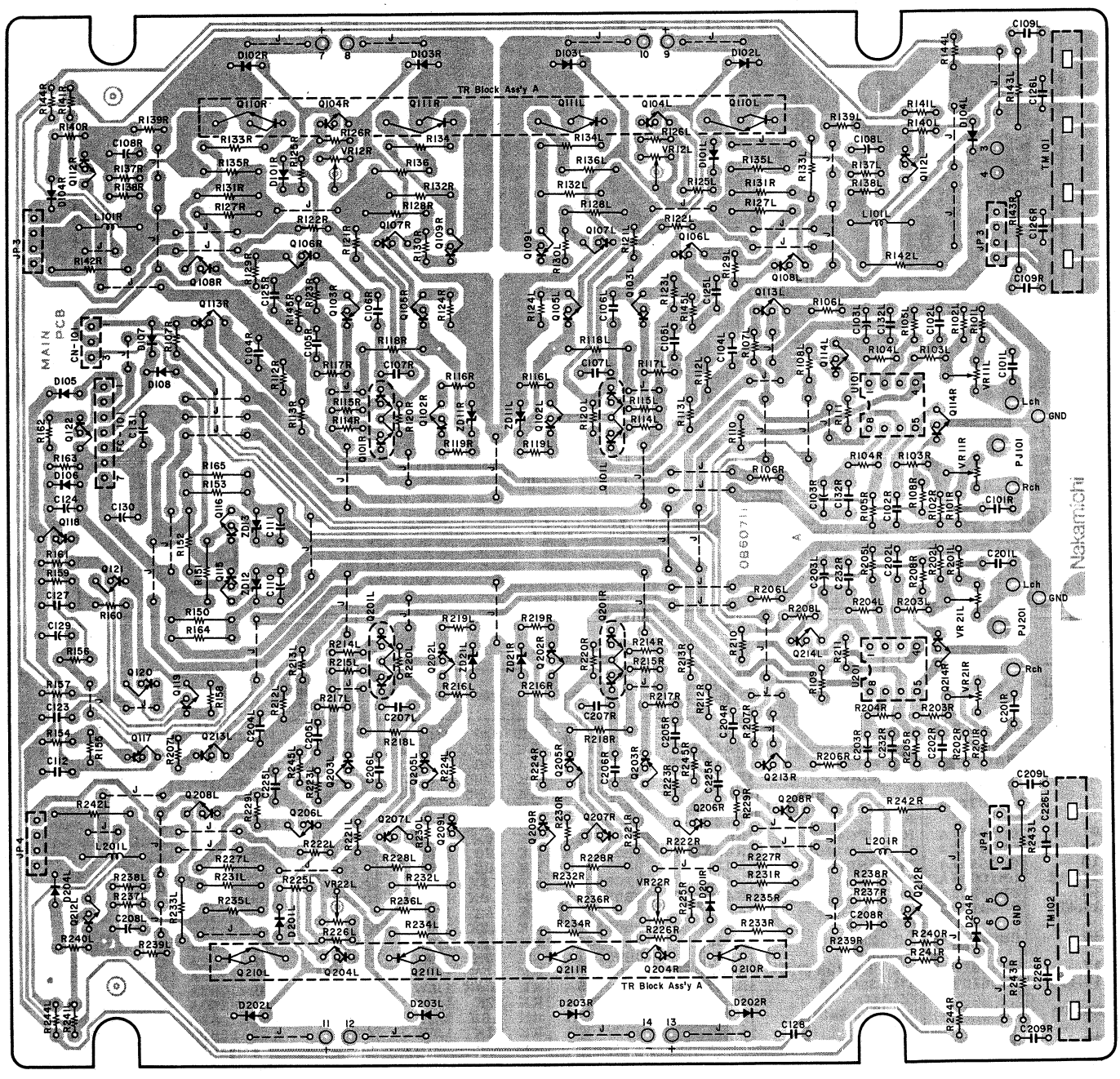


Fig. 5.2

5.3. Fuse P.C.B. Ass'y

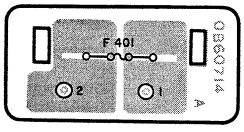


Fig. 5.3

5.4. BTL Switch P.C.B. Ass'y

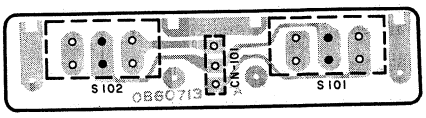


Fig. 5.4

Note: Two pcs. of TR Block Ass'y A are not included in the Main P.C.B. Ass'y. (See item 1.1.)

Schematic Ref. No.	Part No.	Description
5.2. Main P.C.B. Ass'y		
	BA07652A (Note)	**Main P.C.B. Ass'y**
	0B60711A	Main P.C.B.
U101	0B11713A	IC μPC4570C
U201	0B11713A	IC μPC4570C
Q101L,R	0B10125A	TR 2SC2259 (F,G,H)
Q102L,R	0B06142A	TR 2SC2240 (BL)
Q103L,R	0B10050A	TR 2SA970 (BL)
Q105L,R	0B06142A	TR 2SC2240 (BL)
Q106L,R	0B06142A	TR 2SC2240 (BL)
Q107L,R	0B10050A	TR 2SA970 (BL)
Q108L,R	0B10199A	TR 2SC3421
Q109L,R	0B10198A	TR 2SA1358
Q112L,R	0B06142A	TR 2SC2240 (BL)
Q113L,R	0B06299A	TR 2SC2878
Q114L,R	0B06299A	TR 2SC2878
Q115	0B10050A	TR 2SA970 (BL)
Q116	0B06142A	TR 2SC2240 (BL)
Q117,118	0B06013A	TR 2SA733 (P,Q)
Q119	0B06100A	TR 2SC945 (K,P,Q)
Q120	0B06013A	TR 2SA733 (P,Q)
Q121,122	0B06100A	TR 2SC945 (K,P,Q)
Q201L,R	0B10125A	TR 2SC2259 (F,G,H)
Q202L,R	0B06142A	TR 2SC2240 (BL)
Q203L,R	0B10050A	TR 2SA970 (BL)
Q205L,R	0B06142A	TR 2SC2240 (BL)
Q206L,R	0B06142A	TR 2SC2240 (BL)
Q207L,R	0B10050A	TR 2SA970 (BL)
Q208L,R	0B10199A	TR 2SC3421
Q209L,R	0B10198A	TR 2SA1358
Q212L,R	0B06142A	TR 2SC2240 (BL)
Q213L,R	0B06299A	TR 2SC2878
Q214L,R	0B06299A	TR 2SC2878
ZD11L,R	0B12360A	ZD 2.7V RD2.7ESB2
ZD12,13	0B12186A	ZD 18V RD18JSB2
ZD21L,R	0B12360A	ZD 2.7V RD2.7ESB2
D101L,R	0B06398A	SiD 1SS176
D102L,R	0B12624A	SiD 1SS177
D103L,R	0B12624A	SiD 1SS177
D104L,R	0B06398A	SiD 1SS176
D105,106	0B06398A	SiD 1SS176
D107,108	0B06398A	SiD 1SS176
D201L,R	0B06398A	SiD 1SS176
D202L,R	0B12624A	SiD 1SS177
D203L,R	0B12624A	SiD 1SS177
D204L,R	0B06398A	SiD 1SS176
L101L,R	0B51315A	Output Coil 0.8μH
L201L,R	0B51315A	Output Coil 0.8μH
VR11L,R	0B32164A	Semi VR 10K
VR12L,R	0B32072A	Semi VR 470
VR21L,R	0B32164A	Semi VR 10K
VR22L,R	0B32072A	Semi VR 470
R101L,R	0B09694A	RK 5.1K 1/6W J
R102L,R	0B09713A	RK 33K 1/6W J
R103L,R	0B09677A	RK 1.0K 1/6W J
R104L,R	0B22338A	RM 9.09K 1/4W F
R105L,R	0B22193A	RM 487 1/4W F
R106L,R	0B22283A	RM 3.09K 1/4W F
R107L,R	0B09709A	RK 22K 1/6W J
R108L,R	0B09709A	RK 22K 1/6W J
R109,110	0B09749A	RK 1.0M 1/6W J
R111	0B22338A	RM 9.09K 1/4W F
R112L,R	0B22327A	RM 7.15K 1/4W F
R113L,R	0B09653A	RK 100 1/6W J
R114L,R	0B09697A	RK 6.8K 1/6W J
R115L,R	0B09697A	RK 6.8K 1/6W J
R116L,R	0B09695A	RK 5.6K 1/6W J
R117L,R	0B09665A	RK 330 1/6W J
R118L,R	0B24227A	RF 12K 1/2W
R119L,R	0B09665A	RK 330 1/6W J
R120L,R	0B22283A	RM 3.09K 1/4W F
R121L,R	0B09701A	RK 10K 1/6W J
R122L,R	0B22327A	RM 7.15K 1/4W F
R123L,R	0B09657A	RK 150 1/6W J
R124L,R	0B09669A	RK 470 1/6W J
R125L,R	0B09686A	RK 2.4K 1/6W J
R126L,R	0B09669A	RK 470 1/6W J
R127L,R	0B01846A	RK 4.7K 1/4W J
R128L,R	0B01846A	RK 4.7K 1/4W J
R129L,R	0B09629A	RK 10 1/6W J
R130L,R	0B09629A	RK 10 1/6W J
R131L,R	0B01933A	RK 220 1/4W J
R132L,R	0B01933A	RK 220 1/4W J
R133L,R	0B05695A	RK 1.0 1/4W J
R134L,R	0B05695A	RK 1.0 1/4W J
R135L,R	0B24226A	RC 0.22 5W
R136L,R	0B24226A	RC 0.22 5W
R137L,R	0B09713A	RK 33K 1/6W J
R138L,R	0B09709A	RK 22K 1/6W J
R139L,R	0B20093A	RK 1.5M 1/6W J
R140L,R	0B09743A	RK 560K 1/6W J
R141L,R	0B09701A	RK 10K 1/6W J
R142L,R	0B24229A	RF 3.3 1W J
R143L,R	0B24095A	RF 4.7 1W J
R144L,R	0B09737A	RK 330K 1/6W J
R145L,R	0B09647A	RK 56 1/6W J
R150	0B05614A	RK 1.8K 1/4W J
R151,152	0B05622A	RK 2.2K 1/4W J
R153	0B05614A	RK 1.8K 1/4W J
R154	0B09677A	RK 1.0K 1/6W J
R155	0B09725A	RK 100K 1/6W J
R156	0B09677A	RK 1.0K 1/6W J
R157	0B09701A	RK 10K 1/6W J
R158	0B09729A	RK 150K 1/6W J
R159	0B09727A	RK 120K 1/6W J
R160	0B09717A	RK 47K 1/6W J
R161	0B09749A	RK 1.0M 1/6W J
R162	0B09709A	RK 22K 1/6W J
R163	0B09725A	RK 100K 1/6W J
R164	0B05614A	RK 1.8K 1/4W J
R165	0B05614A	RK 1.8K 1/4W J
R201L,R	0B09694A	RK 5.1K 1/6W J
R202L,R	0B09713A	RK 33K 1/6W J
R203L,R	0B09677A	RK 1.0K 1/6W J
R204L,R	0B22338A	RM 9.09K 1/4W F
R205L,R	0B22193A	RM 487 1/4W F
R206L,R	0B22283A	RM 3.09K 1/4W F
R207L,R	0B09709A	RK 22K 1/6W J
R208L,R	0B09709A	RK 22K 1/6W J
R210	0B09749A	RK 1.0M 1/6W J
R211	0B22338A	RM 9.09K 1/4W F
R212L,R	0B22327A	RM 7.15K 1/4W F
R213L,R	0B09653A	RK 100 1/6W J
R214L,R	0B09697A	RK 6.8K 1/6W J
R215L,R	0B09697A	RK 6.8K 1/6W J
R216L,R	0B09695A	RK 5.6K 1/6W J
R217L,R	0B09665A	RK 330 1/6W J
R218L,R	0B24227A	RF 12K 1/2W
R219L,R	0B09665A	RK 330 1/6W J
R220L,R	0B22283A	RM 3.09K 1/4W F
R221L,R	0B09701A	RK 10K 1/6W J
R222L,R	0B22327A	RM 7.15K 1/4W F
R223L,R	0B09657A	RK 150 1/6W J
R224L,R	0B09669A	RK 470 1/6W J
R225L,R	0B09686A	RK 2.4K 1/6W J
R226L,R	0B09669A	RK 470 1/6W J
R227L,R	0B01846A	RK 4.7K 1/4W J
R228L,R	0B01846A	RK 4.7K 1/4W J
R229L,R	0B09629A	RK 10 1/6W J
R230L,R	0B09629A	RK 10 1/6W J
R231L,R	0B01933A	RK 220 1/4W J
R232L,R	0B01933A	RK 220 1/4W J
R233L,R	0B05695A	RK 1.0 1/4W J
R234L,R	0B05695A	RK 1.0 1/4W J
R235L,R	0B24226A	RC 0.22 5W
R236L,R	0B24226A	RC 0.22 5W
R237L,R	0B09713A	RK 33K 1/6W J
R238L,R	0B09709A	RK 22K 1/6W J
R239L,R	0B20093A	RK 1.5M 1/6W J
R240L,R	0B09743A	RK 560K 1/6W J
R241L,R	0B09701A	RK 10K 1/6W J
R242L,R	0B24229A	RF 3.3 1W J
R243L,R	0B24095A	RF 4.7 1W J
R244L,R	0B09737A	RK 330K 1/6W J
R245L,R	0B09647A	RK 56 1/6W J
C101L,R	0B09249A	C 33P 50V J
C102L,R	0B09322A	CPP 330P 100V J
C103L,R	0B09933A	CE 2.2μ 50V (LN)
C104L,R	0B41119A	CPP 560P 100V G
C105L,R	0B05653A	CML 1500P 50V J
C106L,R	0B09249A	C 33P 50V J
C107L,R	0B09242A	C 47P 50V J
C108L,R	0B40027A	CE 2.2μ 50V
C109L,R	0B41302A	CML 0.22μ 50V J
C110,111	0B40466A	CE 47μ 25V (LN)
C112	0B41298A	CML 0.1μ 50V J
C123	0B40250A	CE 100μ 16V (BP)
C124	0B40027A	CE 2.2μ 50V
C125L,R	0B41292A	CML 0.033μ 50V J
C126L,R	0B41294A	CML 0.047μ 50V J
C127	0B41298A	CML 0.1μ 50V J
C128	0B09880A	CML 1μ 50V J
C129	0B40075A	CE 22μ 16V
C130	0B40639A	CE 470μ 35V (LN)
C131	0B40637A	CE 220μ 35V (LN)
C132L,R	0B41291A	CML 0.027μ 50V J
C201L,R	0B09249A	C 33P 50V J
C202L,R	0B09322A	CPP 330P 100V J
C203L,R	0B09933A	CE 2.2μ 50V (LN)
C204L,R	0B41119A	CPP 560P 100V G
C205L,R	0B05653A	CML 1500P 50V J
C206L,R	0B09249A	C 33P 50V J
C207L,R	0B09242A	C 47P 50V J
C208L,R	0B40027A	CE 2.2μ 50V
C209L,R	0B41302A	CML 0.22μ 50V J
C225L,R	0B41292A	CML 0.033μ 50V J
C226L,R	0B41294A	CML 0.047μ 50V J
C232L,R	0B41291A	CML 0.027μ 50V J
CN101	0B81760A	3P-T Post
	0B83747A	Ribbon Cable 4P 210mm (2)
	0E00868A	BT3x8 ⊕ Binding (4)
	0E00172A	Washer 3mm Toothed Lock (2)
5.3. Fuse P.C.B. Ass'y		
	BA07655A	**Fuse P.C.B. Ass'y**
	0B60714A	Fuse P.C.B.
	0B84108A	Auto Fuse Holder (1)
	0B80235A	Wire RED 90mm (1)
	0B80236A	Wire RED 120mm (1)
5.4. BTL Switch P.C.B. Ass'y		
	BA07654A	**BTL Switch P.C.B. Ass'y**
	0B60713A	BTL Switch P.C.B.
S101,102	0B70137A	Slide Switch
CN101	0B83746A	Wire Ass'y 3P 210mm
	0E00791A	M2.6x5 ⊕ Binding (2)
	0J05926A	Slide Switch Holder (1)

6. WIRING DIAGRAM

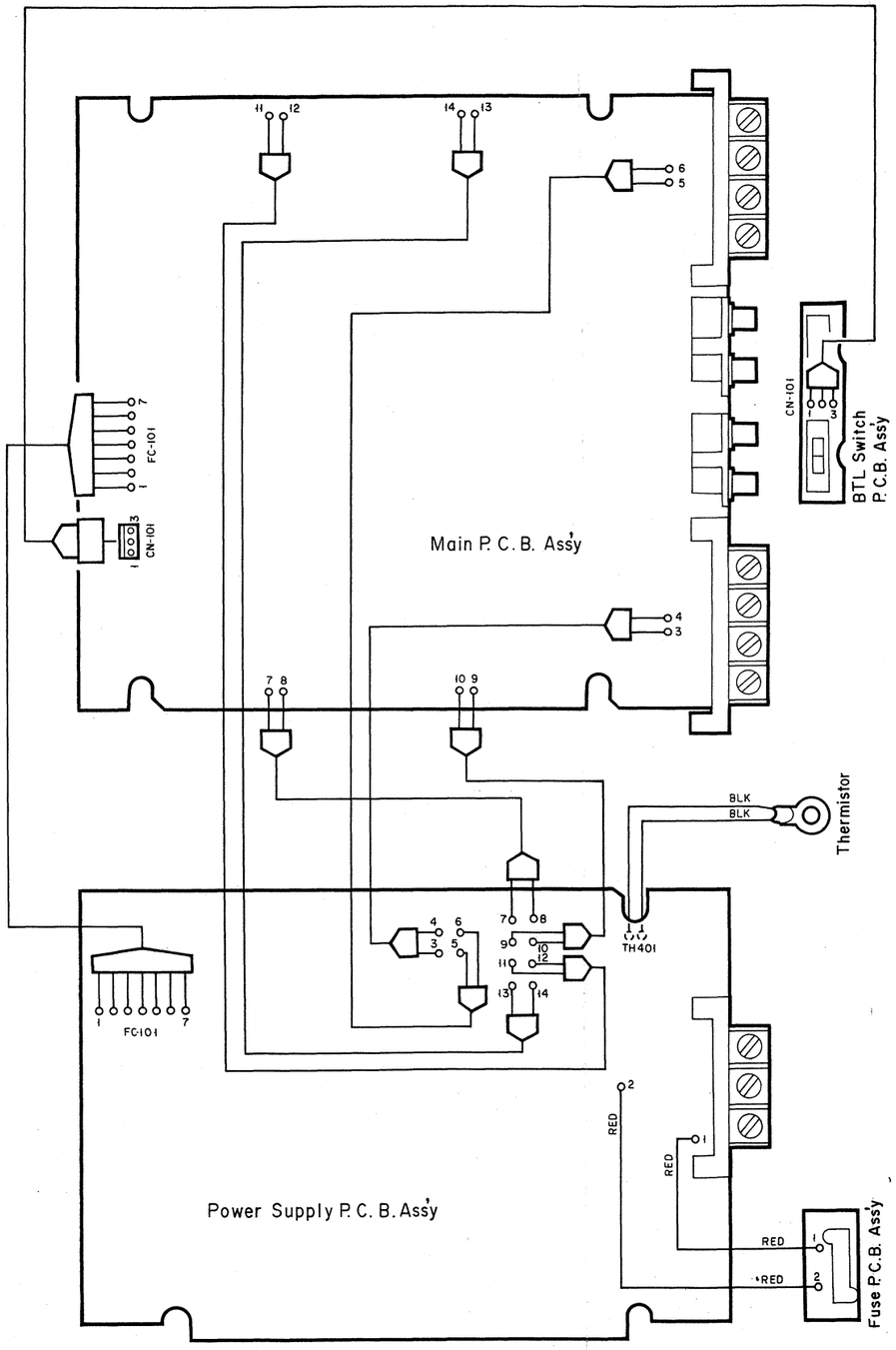


Fig. 6

Notes: 1. Table of
BRN —
RED —
ORN —
YEL —
GRN —
BLU —
VIO —
GRY —
WHT —
BLK —
2. Compone
of the P.C
illustrate
otherwise

n 1.1.)

Schematic Ref. No.	Part No.	Description
C126L,R	0B41294A	CML 0.047μ 50V J
C127	0B41298A	CML 0.1μ 50V J
C128	0B09880A	CML 1μ 50V J
C129	0B40075A	CE 22μ 16V
C130	0B40639A	CE 470μ 35V (LN)
C131	0B40637A	CE 220μ 35V (LN)
C132L,R	0B41291A	CML 0.027μ 50V J
C201L,R	0B09249A	C 33P 50V J
C202L,R	0B09322A	CPP 330P 100V J
C203L,R	0B09933A	CE 2.2μ 50V (LN)
C204L,R	0B41119A	CPP 560P 100V G
C305L,R	0B05653A	CML 1500P 50V J
C206L,R	0B09249A	C 33P 50V J
C207L,R	0B09242A	C 47P 50V J
C208L,R	0B40027A	CE 2.2μ 50V
C209L,R	0B41302A	CML 0.22μ 50V J
C325L,R	0B41292A	CML 0.033μ 50V J
C226L,R	0B41294A	CML 0.047μ 50V J
C232L,R	0B41291A	CML 0.027μ 50V J
CN101	0B81760A	3P-T Post
	0B83747A	Ribbon Cable 4P 210mm (2)
	0E00868A	BT3x8 ⊕ Binding (4)
	0E00172A	Washer 3mm Toothed Lock (2)
5.3. Fuse P.C.B. Ass'y		
	BA07655A	**Fuse P.C.B. Ass'y**
	0B60714A	Fuse P.C.B.
	0B84108A	Auto Fuse Holder (1)
	0B80235A	Wire RED 90mm (1)
	0B80236A	Wire RED 120mm (1)
5.4. BTL Switch P.C.B. Ass'y		
	BA07654A	**BTL Switch P.C.B. Ass'y**
	0B60713A	BTL Switch P.C.B.
S101,102	0B70137A	Slide Switch
CN101	0B83746A	Wire Ass'y 3P 210mm
	0E00791A	M2.6x5 ⊕ Binding (2)
	0J05926A	Slide Switch Holder (1)

6. WIRING DIAGRAM

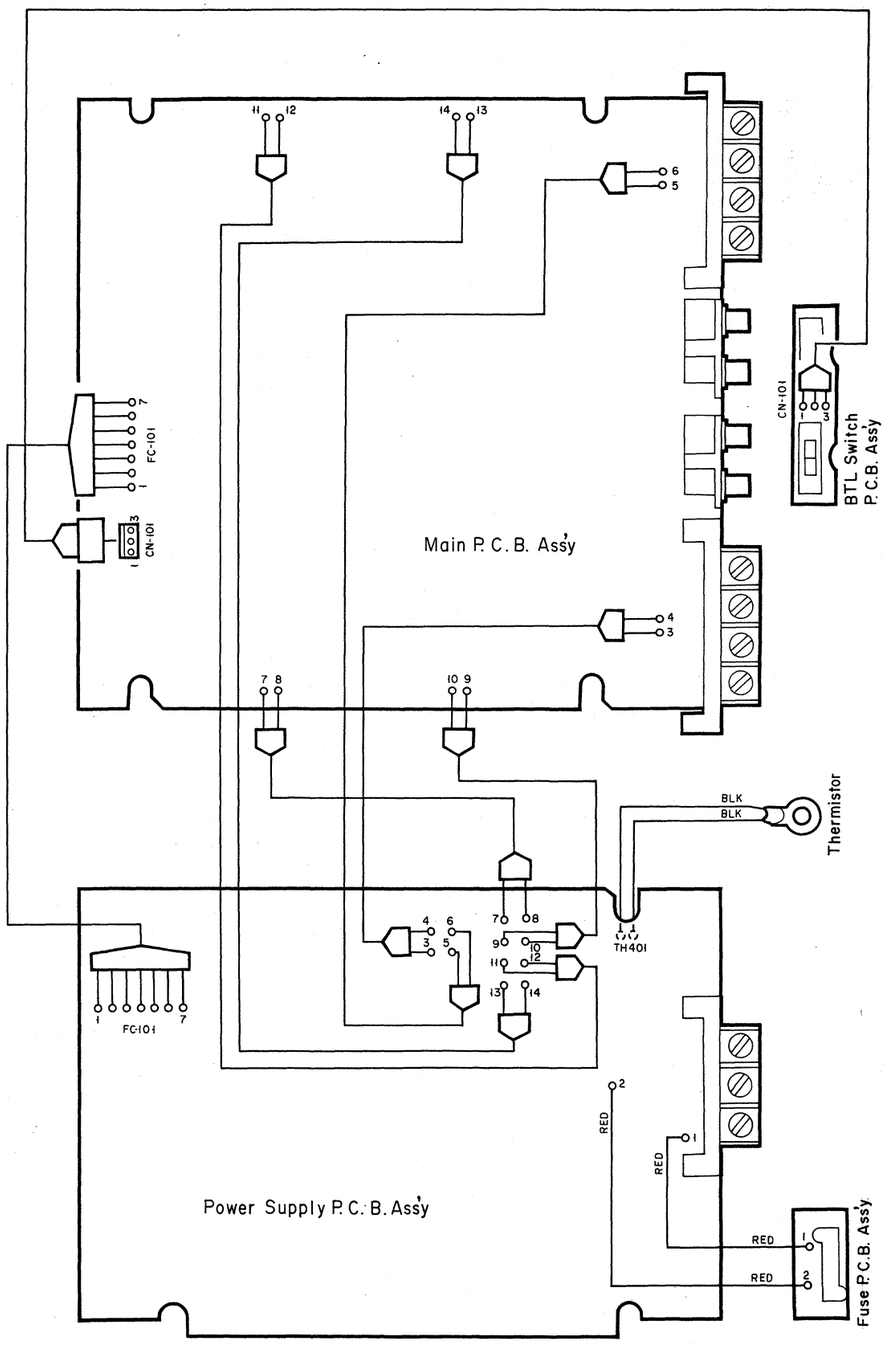


Fig. 6

Notes: 1. Table of wire colors
- BRN — Brown
- RED — Red
- ORN — Orange
- YEL — Yellow
- GRN — Green
- BLU — Blue
- VIO — Violet
- GRY — Gray
- WHT — White
- BLK — Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.

7. SCHEMATIC DIAGRAM

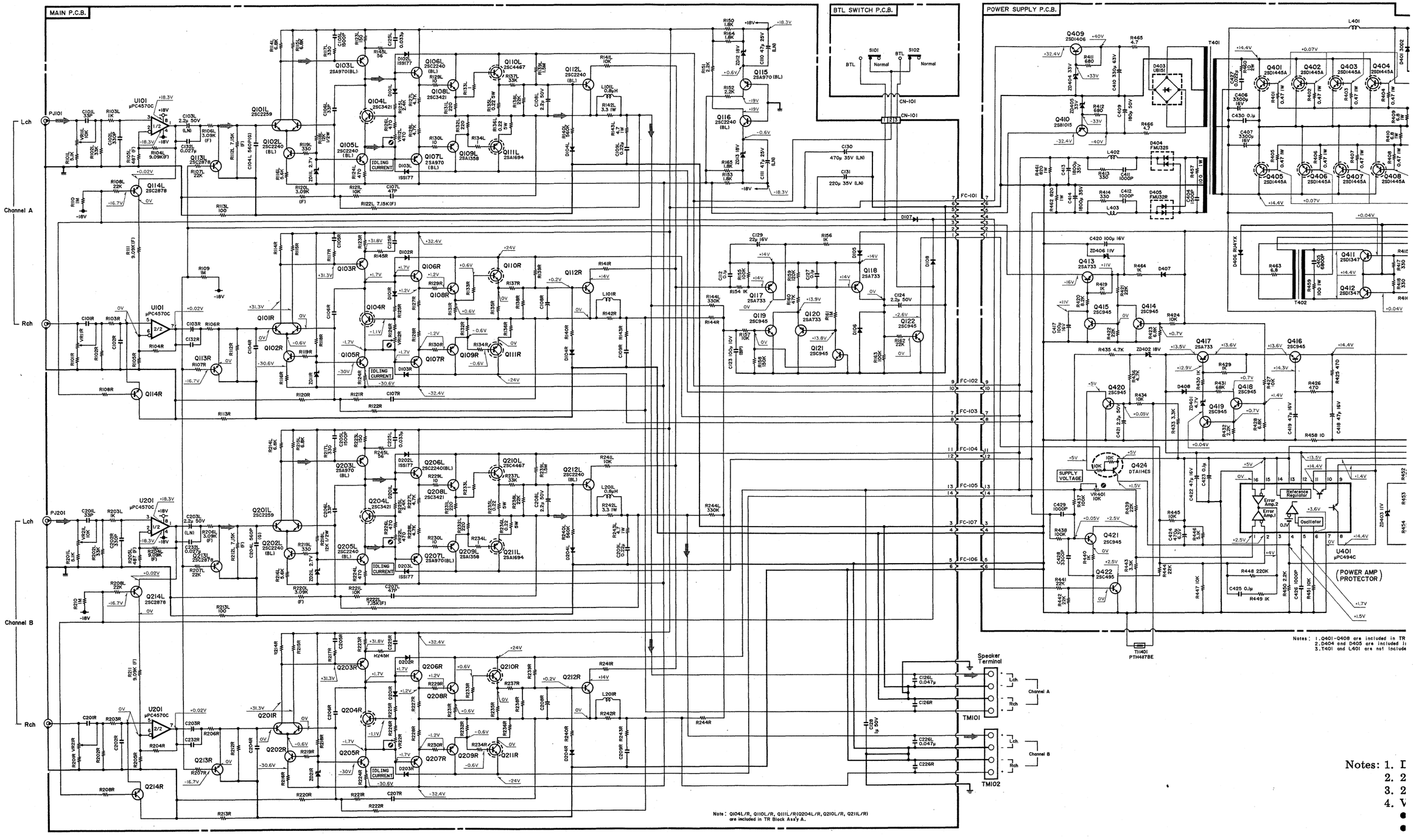


Fig. 7

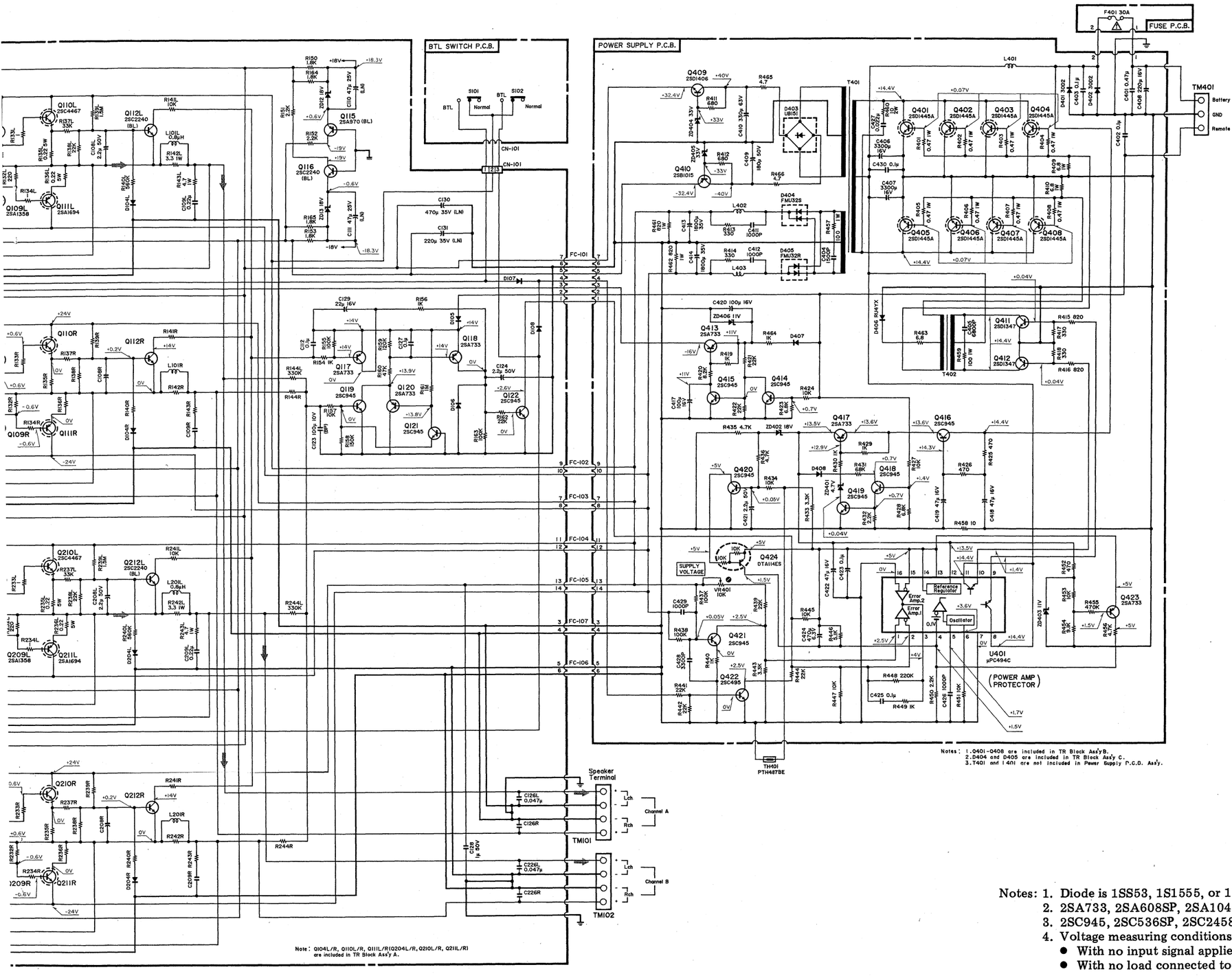
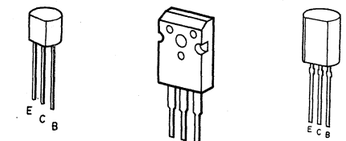
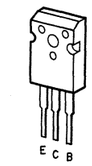


Fig. 7

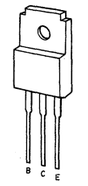


2SA733
2SA970
2SC945
2SC2240
2SC2878

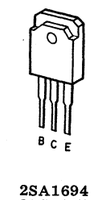


2SA1358
2SC3421

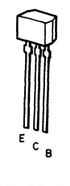
2SD1347



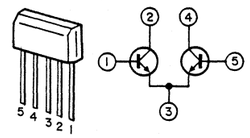
2SB1015
2SD1406
2SD1445



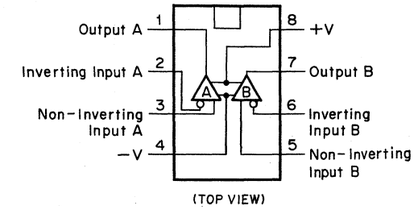
2SA1694
2SC4467



DTA114ES



2SC2259



Operational Amp. IC μPC4570C

Notes: 1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.
4. Voltage measuring conditions
   - With no input signal applied to the input jacks.
   - With no load connected to the speaker terminals.

8. BLOCK DIAGRAM

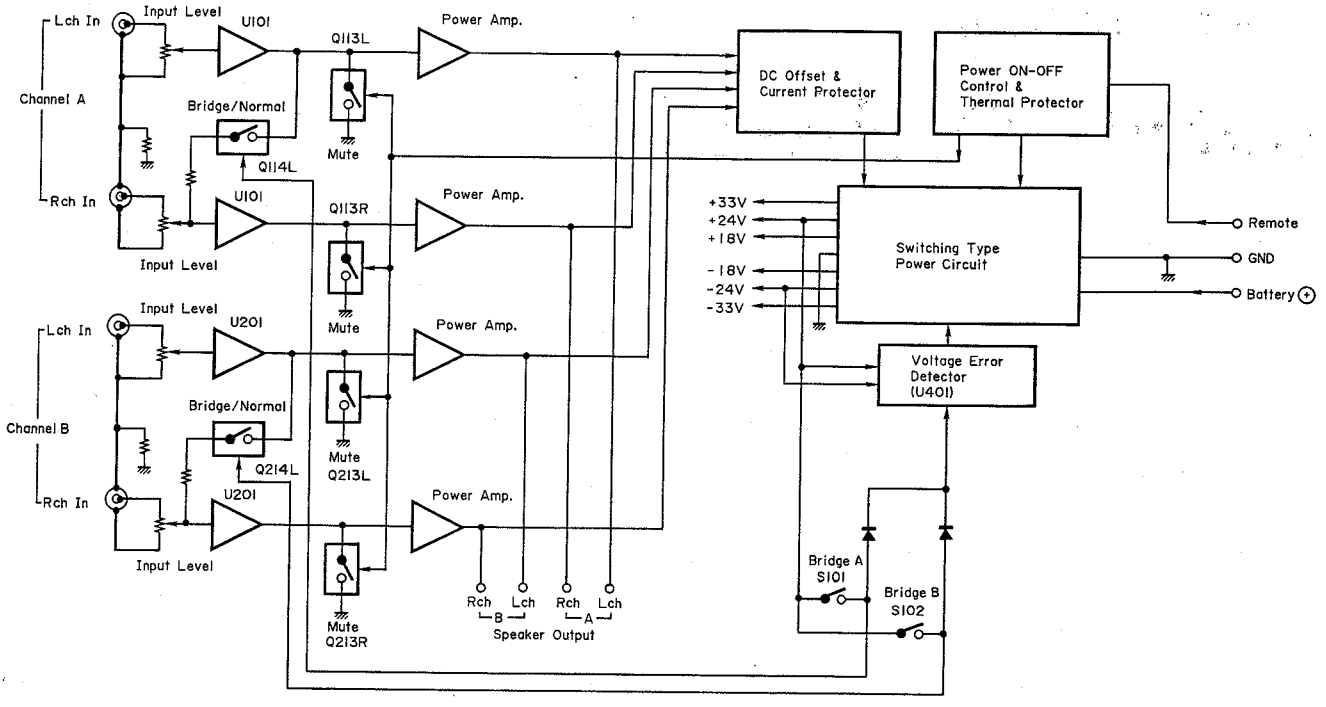


Fig. 8

9. SPECIFICATIONS

Continuous Power Output	45 W x 4 RMS (four channels driven, 4 ohms, 1 kHz, 0.005% THD)
	30 W x 2 + 90 W x 1 RMS (three channels driven, 4 ohms, 1 kHz, 0.01% THD)
	90 W x 2 RMS (two channels driven, 4 ohms, 1 kHz, 0.01% THD)
Power Bandwidth	10—50,000 Hz (4 ohms, 0.1% THD)
Total Harmonic Distortion	0.005% (4 ohms, 1 kHz, 45 W)
Frequency Response	10—50,000 Hz +1, —3 dB (with input sensitivity control at max.)
	20—20,000 Hz ±1 dB (with input sensitivity control at max.)
Signal to Noise Ratio	Better than 110 dB (IHF A-WTD, at rated power, with input sensitivity control at max.)
Damping Factor	Greater than 1,000 (4 ohms, 1 kHz)
Input Sensitivity/Impedance	0.3—0.8 V variable/10 kohms ("Normal" position)
	0.2—0.55 V variable/10 kohms ("Bridge" position)
Stereo Separation	Better than 80 dB (4 ohms, 1 kHz)
Power Source	14.4 V DC negative ground (10.8—15.6 V allowable)
Current Consumption	
Max.	29 A (four channels driven, 4 ohms, 45 W x 4)
	36 A (two channels driven, 4 ohms, 90 W x 2)
Music	Approx. 10 A (4 ohms)
Min.	Approx. 2 A (Idling)
Load Impedance	Above 4 ohms
Dimensions*	320 (W) x 56 (H) x 190 (D) mm
	12-5/8 (W) x 2-3/16 (H) x 7-1/2 (D) inches
Approximate Weight	3.8 kg/8 lbs. 6 oz.

*: Dimensions do not include protruding parts. Height is the panel height.

- Unless otherwise noted, all measurements are with four channels driven ("Normal" position).
- Specifications and design are subject to change for further improvement without notice.